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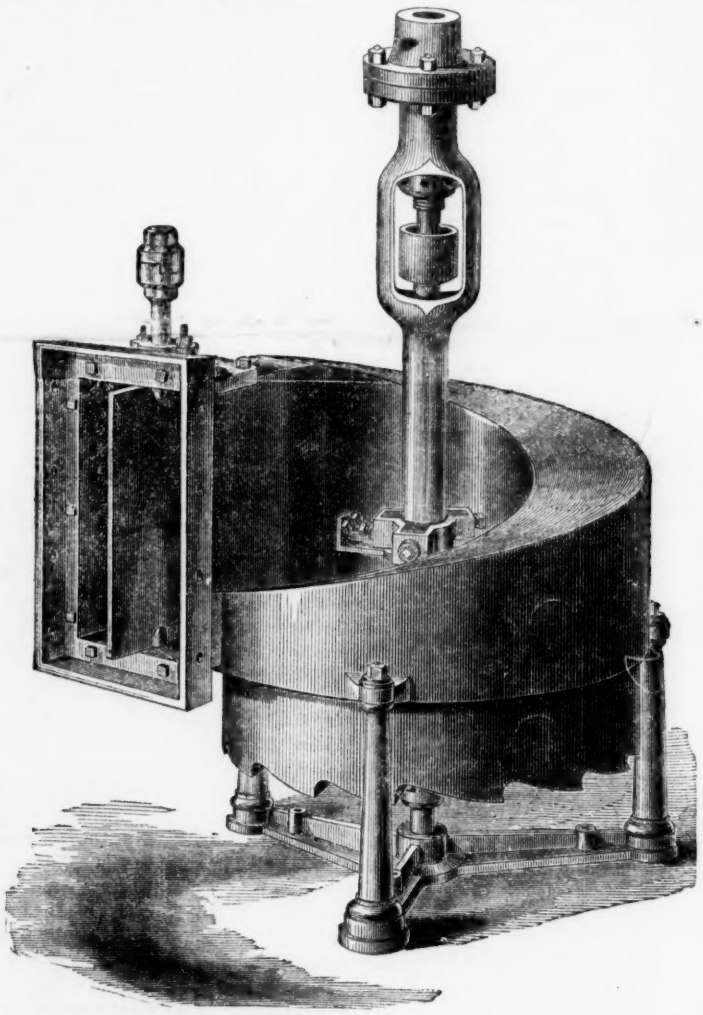
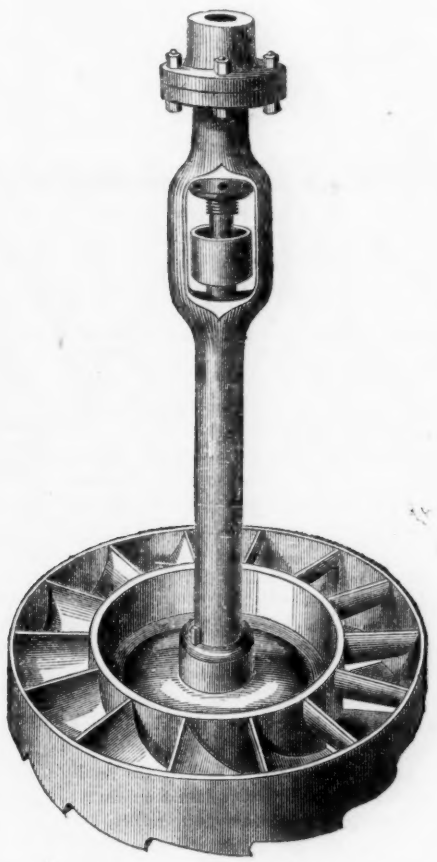
Improved Turbine.

No class of water motors seem to be in so much demand as the Turbine wheels, and the improvements in them, it would appear keep equal pace with the demand. When we consider the great amount of money expended by manufacturing companies throughout some of our manufacturing States, in procuring a supply of water and saving the same during the dry seasons, the necessity of economizing its use at once becomes apparent, and we begin to realize the great importance of the water power of the country.

In this consideration the great object to be gained in selecting a water wheel, is to obtain one built on scientific principles, deduced from long practical experience,





and which can be depended upon at all seasons of the year to give the greatest maximum of power with the average minimum of water.

The inventor seems fully to have attained these ends in the Helical Jonval Turbine, represented by the engravings herewith. One is a perspective view of the turbine complete; the other, is a view of the wheel and shaft.

This turbine is now being used in the best mills and factories throughout the country, and especially New York, New Jersey, and the New England States, where great economy of water is necessary, from the constantly decreasing supply, owing to the clearing up and better cultivation and drainage of the land.

The inventor of this turbine experimented with one of his "Improved Jonval Turbines," at "Fairmount Works," Philadelphia, in 1859 and 1860, under the direction of H. P. M. Birkinbine, Chief Engineer of the Water Department, and O. H. P. Parker, Chairman of the Water Committee, producing a result, according to the test, of .8777 per cent. of useful effect, exclusive of the friction of the transmitting machinery, which was calculated at three per cent., making a total of .9077 per cent., being from six to twelve per cent. over all turbines of the same class, and from fifteen to twenty per cent. over the best scroll and centre vent wheels; thus coming in competition with nineteen different wheels by some of the best builders in the country, and obtaining results never before equalled in any practical test.

The main principles and features of the turbine producing these results have been more fully matured and carefully embodied in the Helical Turbine, in its present improved form, and by adding improvements that were found only in practice to be such, have made it the most complete, powerful, and durable turbine ever made, equal in efficiency and superior in simplicity of construction to the improved Jonval Turbine.

The step is made of steel, running in oil, upon composition bearing metal of peculiar construction, placed in the hollow shaft above the wheel, and is so arranged that it can be taken out and cleaned and put back in its place in ten minutes, which is required to be done only once in about two months.

The issues of the wheel are large, and not liable to clog up with rubbish or anchorice, and it runs equally as well in backwater as out. It utillzes all the head.

It has been fully tested by the side of the best constructed over-shot wheels in the same mill; arranged so that the same machinery could be driven alternately by the over-shot and turbine, showing large results in favor of the turbine, in amount of water used, and greatly increased production, owing to the regularity of speed and power.

For further information address J. E. Stevenson, Hydraulic Engineer, 40 Dey street, New York. His advertisement will be found in another column.

Petroleum and its Products.

[Prof. P H. Vander Weyde, late Profes-or of Chemistry in Gerard College, Philadelphia, sends the *Scientific American* the annexed article, which we consider of sufficient importance and interest to transfer to our columns.—Eds. Jour.]

Allow me to give you some information on this subject, additional to that contained in your number of May 19th, last. The kinds of petroleum most adapted for distillation have a specific gravity of 0·82 to 0·68, corresponding to 40° to 46° of Beaume's hydrometer Most petroleum oils are of this kind. The heavier kinds are not profitable for distillation, containing a less percentage of volatile products; but when the specific gravity is as low as 32° or 30° they are considered unfit for the production of kerosene, but are used for lubricators, and it has lately been found that some of the oils of Western Virginia of 28°, corresponding with a specific gravity of 0·89, are the best lubricators. The heaviest oil I have tested was from Mecca, Ohio. It indicated 24° or 0·91 specific gravity. When oils are heavier than this, it is due to earthy or mineral impurities in suspension.

The odor of the two last named oils is the least of fensive; in fact, when crude, not disagreeable. The most disagreeable and offensive are from Kentucky and Canada. Their odor is so strong as almost to exclude them from use. When the oils are distilled at a very low temperature, say below 100° Fahrenheit, and rectified, rhigolene comes off, indicating on Baume's hydrometer 90° to 97° or about 0·6 specific gravity. When the temperature is raised to—

170° we have	Gasoline	80° to 90°	0·63 to 0·61
280° " "	Naptha	70° to 80°	0·67 to 0·63
300° " "	Benzine	60° to 70°	0·73 to 0·67
400° " "	Kerosene	50° to 60°	0·78 to 0·72
500° " "	Kerosene	40° to 50°	0·82 to 0·78
600° " "	Kerosene heavy	40° to 50°	0·82 to 0·78
700° " "	Solid paraffine and illuminating gas.		
800° " "	Solid paraffine and illuminating gas.		

When the temperature of the still is above 500° the product is not as well fit for illuminating purposes—destructive distillation has set in, indicated by the large quantity of gas produced; and the distillate was formerly recommended as a lubricator; it possesses a very offensive odor and taste. At present most distillers use the lighter portions of it in the kerosene, and the heavier portions in the crude oil.

Petroleum has unjustly been condemned by some as a lubricator, because they had unfortunately only tried this last product of the destructive distillation, which being itself nothing but a condensed vapor, is volatile, will evaporate, leave the machinery dry—principally where exposed to heat—and is evidently entirely unfit for a lubricator.

It is the rule among distillers to run the still moderately slow at the end of the operation, which means to be careful not to raise the temperature too high, and by doing this the distillate is less heavy, and a great deal more may run in the kerosene and increase its percentage, which, when amounting to 70 per cent. of the crude oil, is considered very fair.

There is another objection to those high temperatures—the destructive distillation is accompanied by the production of much paraffine, which being solid, and condensing in the coils, may stop them up, principally in winter, and has sometimes caused the explosion of the still

Gasoline, naptha, benzine are, as such, in the crude petroleum, the distillation only seperates them from it; but as soon as we apply a higher temperature, say 400°, we decompose the petroleum and create new products, of which kerosene may be considered one. This may be verified by pouring the products of the distillation back in the remaining tar—an offensive mixture will be obtained very different from the original oil.

The tar drawn off after the distillation is accomplished, is usually mixed with melted rosin, and sold as a lubricator for coarse machinery, wagon grease, etc.

The heavy crude oils from Western Virginia and Kentucky, spoken of above, and which are very valuable lubricators, may be improved and adapted to delicate machinery by refining them by another process, of which filtration is the principal feature. Heat and acids destroy the lubricating qualities.

The difference between benzine and benzole is this: the benzine from petroleum varies during the distillation continually in specific gravity, it has no constant chemical composition, it is rather a mixture of different napthas of different degrees of votality and specific gravity. Benzole obtained from coal tar, on the contrary, is a well defined chemical combination of constant specific gravity, and sharply defined projection of its constituent elements. The benzine rom petroleum contains, often, small quantities of true benzole, as is evident by the chemical reaction of nitric acid upon it, producing the characteristic bitter almond odor of nitro benzole.

In closing, I will remark that at present the kerosene is the most profitable product of the distillation of petroleum, and that the benzine and naptha are much less in price, simply because there is more produced than needed in the market, notwithstanding those substances are most valuable chemical agents. There is no doubt, however, that as soon as some universal application is discovered for those substances, for instance a simple safe lamp to burn them in, they suddenly will rise in price and be esteemed highly by distillers, who at present are compelled to sell them for what they can get.

It has been found that retailers have bought the cheaper benzine and mixed it with the kerosene, and sold the mixture for pure kerosene. This explains the cause of the explosion of some petroleum lamps.

P. H. Vander Weyde, M.D.

Bhiladelphia, Pa, June 1, 1866.

Petroleum as a Steam Fuel.—The experiments for ascertaining whether petroleum and similar mineral oils are capable of practical application as a fuel for the generation of steam, which have been in progress for the past 18 months at Woolwich Dockyard, have now been terminated; the best results obtained, showing that 1 lb. of Torbane Hill oil—that which gave the highest evaporation—would evaporate 18.04 lbs. of water. The experiments have been made by Mr. C. J. Richardson (the last of the family of novelists of the last century), and with the method of which he is the inventor, and which has been already described in the Journal. In the final trial, on Thursday, Mr. Richardson succeeded in evaporating 3705 lbs. of water with 208 lbs. (or about 25 gallons) of oil, the cost of which, at 2s. per gallon, would be 2*l.* 10s. The same weight of water would have required nearly 5 cwts of common coal or upwards of 3 cwts. of good steam coal, to evaporate it, and the cost would have been at least 2s. 6d. Mr. Richardson considers that with a new apparatus, of sufficient strength, better results would be obtained, and that, from the very great rapidity with which it could evidently be burnt, a volume and pressure of steam could be got from this material far beyond any competition on the part of coal. The official reports not having yet been made to the Admiralty, closer comparison of the powers of rock oils and coals cannot be made, but these official reports will be of a most valuable nature.—*London Mining Journal.*

Linoleum.—A substance is now manufacturing from flaxseed called linoleum. It is said that it will supercede India rubber—which it very much resembles, and of which it possesses most of the properties—in the various manufactures of water proof clothing. It can be used for the coating of iron or wood, or for coating ship bottoms. It is as good as common cement, having properties similar to the marine glue made from India rubber and shellac. It is readily vulcanized by exposure to heat, and by this means becomes as hard as the hardest wood, and capable of a fine polish. The variety of uses to which it can be applied in this form will at once suggest themselves to the reader. Hitherto it has been made solely to produce floor cloth, for which it is well adapted.

Another Immense Tunnel.

An enterprise, not so expensive or costly as the Sutro tunnel, but which will accomplish results as important and satisfactory, is mentioned by the Monitor *Gazette* as going forward in that vicinity. The tunnel of the Monitor Consolidated Mining Company, Alpine Co., California, now in over 500 feet, will, when completed to one-fourth the length of the contemplated Sutro, have attained a perpendicular depth under Monitor Mountain of considerably over two thousand feet, and have cut a series of rich silver and gold bearing lodes or veins, including the Morning Star, Florence, Hercules, and not least, though soonest reached, the ledge passing through Boulder Hill, so very rich in its outcrop, and now conceded to be one and the same with the Great Mogul lode—the croppings of which are a wonder even to the well-traveled beholder; also with the Eastern Slope lode now being tapped by a Virginia company, and showing the characteristics of a true and permanent vein, and further south the celebrated Buckeye, No. 2, in Scandinavian Canon, ore from which is to be worked soon at the Pioneer Mill in Markleeville. The tunnel of the company will cut the ledge spoken of, known at various points as above mentioned and easily traced by its course and the similarity of its croppings, within the next 100 feet and at the depth of 1000 feet. The company have a mill-site at the mouth of the tunnel, with the whole Carson river as a motive power, sufficient for a hundred ton mill at the lowest stage of water. Preparations to put in operation the company's mill, nearly all the machinery of which was some time ago on the ground, are going forward.

The Difference in Estimates.—It is estimated that the total supply of gold for the latter half of the present century will not be less than $5,500,000,000—an amount too vast for comprehension, and more than seven times the production of two centuries ago.—*Mercantile Journal.*

The total amount of gold and silver ore extracted from the earth up to the present time, as far as can be ascertained, amounts to about $22,000,000,000, of which only about one half at present remains in existence. It is curious to note how civilization has affected the product of precious metals. During the most enlightened period of the Roman Empire, when she was mistress of the world, and art and literature were cultivated, the whole amount of gold and silver was estimated at $1,500,000,000, and the annual product at $5,000,000. In the fifteenth century, while bigotry and ignorance entrammeled Europe, and the New World of promise had not been discovered, the annual product had declined to about a quarter of a million; and in 1860 it had increased to nearly $300,000,000. And since that time new gold fields have been discovered and worked with the energy of the age, which will probably swell the annual product of precious metals about $100,000,000.—*Stockholder.*

Don't Sell Peat Swamps.—A writer in the *American Agriculturist* advises farmers not to sell peat swamps, or at least to be sure and get their value. He says that one party in Northern New York has been offered $400 per acre for a fine peat bed. One in New Jersey has been offered $25,000 for a bed of 28 acres, but knowing its value he refused to take it. The writer says an acre of peat ten feet deep will produce 5,000 tons of fuel. The cost of manufacture is less than $3 per ton. It will sell at $6 to $8 per ton, leaving a nice little profit of from $15,000 to $25,000 per acre. He says that every iron manufacturer knows that if he can get peat to stand the blast, it is infinitely superior to coal for their purpose, for the simple reason that it contains no sulphur. They could produce iron by peat from the worst brands, which would almost equal the best Swedish or Russian iron, simply owing to the absence of the deteriorating chemical agents which exist in coal.

Dividend.—The Gould & Curry Silver Mining Company, of San Francisco, has declared a dividend of eighty dollars per foot in gold, payable on stock registered for dividends in New York, less exchange.

Sodium Amalgam.

Sodium amalgam has been pretty well known for about sixty years. Several distinguished chemists, among whom was Sir Humphrey Davy, at the beginning of this century, busied themselves with studying it, and it was reasonably supposed that nothing of importance would be added to what they taught us of its properties. Yet the fact is that quite recently we have learned something about sodium amalgam that is practically worth more than all that we previously knew. It will now be taken out of the old curiosity shop and put in the market place; instead of being only a source of amusement and instruction to beginners in chemistry, it will minister to one of the strongest desires of men. Sodium and mercury being both metals, have a wonderful affinity for each other. When they are brought together, there is a grand clash of atoms, so Prof. Tyndall would express it, and there is smoke and loud sounds, and flame, and intense heat; the experiment is a dangerous one, unless made on a very small scale. When the sodium amalgum is brought into contact with almost any metallic salt, the sodium seizes the oxygen, chlorine, or sulphur, and the mercury lays hold of the metal; in this way amalgams of iron, platinum and other metals which ordinarily do not combine with mercury, may be made. If sodium amalgam be put into a solution of sal-ammoniac, the amalgam, without losing its metallic appearance, increase prodigiously in size, and reminds one now-a-days of Pharoah's serpents; this curious experiment suggested the famous ammonium theory, which is discussed in every text-book on chemistry. A very little sodium makes a solid amalgam; 1 part sodium to 50 parts mercury, gives a consistency of butter; 1 sodium to 30 mercury gives a solid, not so tough, but otherwise much resembling zinc. But these facts are not new, and we proceed to those which are the object of this article. Dr. Henry Wurtz, now of this city, but formerly of the Patent Office, is the discoverer of the new uses of sodium amalgam. From patent examiner, he has become an inventor; we congratulate him on his auspicious beginning. Dr. Wurtz has found that when a very little sodium is added to ordinary mercury, the affinity of the mercury for metals generally is so increased, that for use in the arts this mixture acts almost like a new substance. Gold and silver miners have long complained that their mercury was too feeble in solvent power, was liable to "flour" and to get "sick," etc.; that the gold is often in a condition, as in Colorado, where it slips through the fingers of any device set to catch it. Dr. Wurtz's invention is said to be a complete remedy for all these ills. Whenever sodium amalgam touches gold it sticks to it and does not let it go; it sticketh like a broker; to gold and silver it is as adhesive as tar to a contraband. Sodium amalgam is sometimes called magnetic amalgam. Dr. Wurtz has found other uses of sodium amalgam; we have space only to allude to them. He proposes to solidify mercury by means of sodium, and transport it in solid blocks, and when the mercury is to be used, the sodium is removed by a simple process. If a broom be made of iron wire, and charged with the amalgam, it is very useful for sweeping together mercury which has been spilled. Every little particle sticks to the broom, from which it may be shaken off at pleasure. An iron brush may be used like a paint brush, in amalgamating zinc plates for the battery, etc. Mr. William Crookes, the able editor of the *Chemical News*, appears independently to have discovered the useful proprieties of sodium amalgam. But there is little doubt that Dr. Wurtz is the original and first inventor. He antedates Mr. Crookes eight months by his patent, and there is evidence that he has been investigating the subject for several years.—*Scientific American.*

The theory that ozone and antozone are two opposite electrical states of oxygen, and that ordinary oxygen is composed of the two opponents balancing each other, has led to the theory that all matter is in this condition, and several important observations have been made which go to sustain the view.

Mammoth Gullies Produced by Rivers west of the Rocky Mountains.—A perpendicular precipice a mile high must be a dizzy place to look over. Recently at the American Institute, the geologist Dr. Stevens, invited attention to the peculiarities of the mammoth gullies, or canons produced by the rivers west of the Rocky Mountains. Our neighbor, the Niagara, had excavated a gully 350 feet deep. The Ohio, near Wellsville, had similarly washed the earth away to a depth of 700 feet below its original formation. But the Black Canon, where the Colorado passes through the Black Mountains, runs for a considerable distance through an elevated plateau the general elevation of which is a mile above its surface. At one point there is absolutely a perpendicular precipice, ascertained by a careful barometric measurement to be one mile in hight. At one point the surface is 6000 feet above the river. His remarks on this, as also on the peculiar steppes or offsets in the formation of the State of New York, measured on the meridian from the Cattskills across the valley of the Mohawk to the Adirondack, were illustrated by large diagrams.

A Stream of Malachite.—A malachite stream is said to have been discovered in Cornwall. A stream of water issuing from several lodes of hematite and white iron ore, has suddenly changed its appearance from the red oxyde of iron to the strongest copper or mineral seen probably in the county; in fact, the whole beach where this stream runs over, and everything it comes in contact with, are as green as malachite, to the astonishment of every one who has seen it, and quite a sensation has been caused in the neighborhood. The inference is that something volcanic has occurred, and that this water is issuing from a great deposit of copper ore not yet discovered in some of the parallel lodes.—*London Engineer.*

Patent Safety Gas-tap.—The absence of a safeguard to prevent the accidental turning on of the tap, which often arises by an undesigned knock whilst dusting or cleaning the gas candalabra or other fittings, causes many fires, explosions, and other disastrous accidents; as also does the want of a protection against children or others from improperly turning on the gas. A patent safety gas-tap has been invented, which renders the accidental turning of the T piece impossible, by means of a very simple and cheap addition to the ordinary gas-tap. A small spring is so arranged, that by the action of the fingers in turning the T piece or plug, it is readily depressed, and then freely allows the gas to be turned on, whereas it effectually secures the gas tap from being opened by any accidental cause. If not liable to get out of order, and there seems little fear of that, this invention must greatly tend to insure safety in the use of gas. It can be applied, at a very trifling cost, to existing gas-fittings, and is readily applicable to the ordinary gas taps.

The Wonders of Chemistry.—Aquafortis and the air we breathe are made of the same materials. Linen and sugar and spirits of wine are so much alike in their chemical composition, that an old shirt can be converted into its weight in sugar, and the sugar into spirits of wine. Wine is made of two substances, one of which is the cause of almost all combination of burning, and the other will burn with more rapidity than anything in nature. The famous Peruvian bark, so much used to strengthen the stomach and the poisonous principle of opium, are found to be of the same materials.

Lighting of Public Halls by Magnesium.—At the Royal Institution, last week, Mr. Larkins exhibited his method of illuminating public halls by the combustion of magnesium. The magnesium, in a finely divided state, is showered on small flames of gas, and thus produces a brilliant illumination. It was the first time the apparatus had been publicly exhibited. The flame was flickering, but the pure quality of the light contrasted strongly with the usual gas flames of the burners in the lecture theater.—*Builder.*

Coal Waste.

The following remarks are extracted from an article on "Coal and Smoke," which appears in the *London Quarterly Review:*

"It should be observed that in South Staffordshire it is not customary to weigh the coal as it leaves the pit, but directly to discharge the contents of the skips into boats, and everyone knows how much the system of boat-gauging is open to fraud. What a South Staffordshire collier calls a ton of coal may probably be estimated at about 27 cwts. of 112 pounds to the cwt. This should be borne in mind in collecting colliery statistics in this locality, for otherwise the results will be to a considerable extent erroneous. It is a common practice for the South Staffordshire colliery proprietors to pay a fee to the steerers of the boats which may be sent to be loaded, it being frequently left to these men to choose where they shall go. It need hardly be remarked that this is another opportunity for the practice of rascality. Moreover, it is not unusual for those having the charge of loaded boats to abstract some of the coal *in transitu*, and to pour water over the remainder in order to make up the weight. We know that these statements are true, and we publish them in order to show how much rottenness still prevails in the colliery trade of a particular district, and to put statisticians on their guard against inaccurate returns of colliery yields. It is, however, satisfactory to know that this state of matters is exceptional. With regard to the total waste of coal in all the collieries of Great Britain, either in the way already described, or by the destructive practice of burning at the pit's mouth great heaps of coal and dust, it is not possible to present any precise or trustworthy information. There is too much reason for apprehension that it greatly exceeds what the public may suppose, or what workers of collieries would be willing to admit. One illustration, on undeniable authority, shall suffice. The late Mr. Nicholas Wood asserted that, in 1861, the waste at the Hetton and Black Boy Collieries alone amounted to 160,000 tons of small coal in a year! From information collected at the Museum of Practical Geology, it would seem that last year about 96,000,000 tons of coal were raised. It would probably be safe to add to the number at least 20,000,000 tons more for waste; or say, in round numbers, that we are now raising about 120,000,000 tons yearly. In 1860 the quantity raised was 80,000,000 tons; and in 1856 about 66,000,000 tons. These numbers are so large that it is difficult to form an accurate conception of what they really mean. With 100,000,000 tons a girdle of coal 3 feet wide and about 7 feet high might be put round the earth."

The writer makes a suggestion which may not be without its use:

"By the carefully regulated distillation of coal, such as the non-caking coal of Staffordshire, oils may be produced in considerable quantity. We have seen such oils from this coal which might be practically applied with advantage; and as the patent for the manufacture of oils from coal by distillation expired last year, there is a new and open field for commercial enterprise in South Staffordshire which well deserves attention."

Oil.—The Napa *Register* notices a curious discovery at the head of Capel Valley, about fifteen miles from that place, a ledge of white quartz, in which are small cavities containing petroleum—a spoonful or so in a place, here and there imbedded in the solid rock. A company, called the Alladin Petroleum company, has been formed for the purpose of prospecting. Not long ago quicksilver was discovered in the same vicinity, in its fluid condition, imbedded in quartz. Nature must be subject to spasms in that region. It is only necessary now for the geysers to commence spouting oil instead of water.

Gold in New Hampshire.—According to a report of Dr. Hayes, State Assayer of Massachusetts, the gold mines of New Hampshire are found to yield, per ton, $867 in gold; the mixed quartz, talcose slate, gozzan, pyrites, &c., yields, upon analysis, $310 42 per ton.

Brevities.

CHILLED cast-iron projectiles are now being made in great numbers in England for use in penetrating armor plates instead of steel shot. The chilling is carried to the very core.

BRICK walls are a great help to ventilation, which takes place through the bricks, if the house is old and dry. This shows the reason of the unhealthiness of iron buildings and of new and damp houses.

CARBONIC acid has been resolved by Mr. Deville into an explosive mixture of carbonic oxide and oxygen. The transformation was effected at 2,372° Fahrenheit.

THE temperature at 22,000 feet above the sea is about 72½° lower than at the surface, which gives, supposing the decrease to be uniform, a diminution of about 1° for every 315° Fahrenheit.

THE machine now used for copying letters was invented by James Watt, and its introduction was strenuously opposed on the ground that it would facilitate the operations of forgers.

THE celebrated Cavour irrigation canal from the river Po to the Ticino has been completed and opened. It has 300 important works along its banks, and is the most important canal for irrigation in Europe.

IT has been discovered that simple pressure of raised surface upon a sensitized photographic plate will produce an image. The whole is performed in the dark, and mechanical means thus made to produce the same effects as light.

THE force of the explosion of gunpowder is greatly increased when the powder is previously heated nearly to its point of decomposition. This may partially account for the bursting of guns after long firing.

ABOUT one year in five is subject to the dry extreme, and one in ten to the wet extreme. The dry years are uniformly hot and the wet years cold. The present, then, should be a wet year in this section of the United States.

A LATE attempt to find the Temple of Diana at Ephesus, by running a tunnel into a large mound outside the city walls, has failed. The recovery of the Odeon is progressing, and the marble is as bright as if just polished.

IN ascending into the air, the heart beats increase 5 for the first 3,000 feet, 7 more for the next 1,500 feet, 8 for the next 1,500, and 5 for each 1,500 feet of ascent after that. This is an average increase of one beat for each 100 yards of ascent.

BY carefully attacking glass with hydrofluoric acid microscopic crystals are developed, which proves that we are not yet acquainted with the true composition of this substance. The crystals vary with different glasses.

IN 1850 the daily water supply of London was 44,383,000 gallons; in 1856, 80,000,000, and in 1865, 108,000,000 gallons. Of this the law allows 100,000,000 gallons daily to be drawn from the Thames, though the amount so taken is really less than this.

THE gold fever is creating some excitement in Georgia. A letter from Dalton, says one company took out enough on Saturday to make $10,000. The mines in Forsyth and Carrol Counties are being worked vigorously.

THERE was an explosion at the gas house in Mohawk recently, caused by a workman snuffing a candle and throwing it on the water tank, which was covered with gas. Two of the workmen were killed—Mr. Cheesbro and Henry Susan (colored). The building was saved.

PERMANENT INK FOR WRITING IN RELIEF ON ZINC.—Bichloride of platinum, dry, one part; gum arabic, one part; distilled water, ten parts. The letters traced upon zinc with this solution turn black immediately. The black characters resist the action of weak acids, of rain, or of the elements in general, and the liquid so adapted for marking signs, labels, or tags, is liable to exposure. To bring out the letters in relief, immerse the zinc tag in a weak acid for a few moments. The writing is not attacked, while the metal is dissolved away.

COAL OIL is a better article for preserving sodium and potassium than naptha. In coal oil, sodium keeps its luster for months and years, whilst in the purest naptha it is dimmed in a few days.

IRON IMPROVED WITH TITANIUM.—Iron thus treated has been tested for tensile strength, and has stood a strain equal to forty-seven tons per square inch; and, in puddling furnaces fettled with the ore, the fettling has, in some instances, lasted a month without renewal, the iron produced being of uniform good quality. These are extreme cases, but indicate the value of the use of the ore.

CLAY GAS RETORTS, it is argued by a correspondent of the *Mechanic's Magazine*, are not, in the long run, economical, as compared with iron ones; for though they cost less and last longer, yet, on account of their inferior conducting power, they cause a waste of fuel, which more than compensates these other advantages. It is proposed, in this connection, to use clay retorts next the fire, but iron ones in the upper part of each setting.

THE Cleveland *Herald* says: We have been informed by gentlemen from the Ohio river, who have been here purchasing pine lumber, that the lumber now being sent down the Alleghany river is thoroughly saturated with oil before it arrives at Pittsburgh and other points below. They say when this lumber is dressed it presents a dark and old appearance as though it had been sawed a number of years, and the odor of oil adheres to it as though the boards had passed through a refinery.

THE Sullivan *Democrat* says, a farmer of Turman township, in driving an ox team across a brook, discovered one of his steers suddenly sink through what he had formerly supposed was solid rock. In extricating the animal's leg he noticed that it had entered a crevice of the rock, and that it was covered with a very peculiar substance resembling paint. It has been submitted to a chemist and pronounced a air quality of terra si-nna, a kind of ochre of value to painters. The Sullivan County Oil and Mining company have a lease on the land and propose to fully investigate this deposit.

FRUIT PRESERVER.—We have had laid on our table specimens of fruit preserved by Spear's Patent Fruit Preserving Solution, which now retain all their natural freshness; those which were presented for our inspection and consideration, have been kept in jars, merely corked, for one, two and three years without fermentation, and still retain their original flavor. The solution has been analized by some of the leading Chemists, (gentlemen of our acquaintance) who, not only pronounce it harmless, but recommend it to the public. Fruits preserved by this new method can be seen at the office of L. P. WORRALL, General Agent, No. 91, Hudson Street.

PETROLEUM AS AN ILLUMINATOR.—The following table prepared by Prof. Weethe, of Mt. Auburn, Ohio, will show the value of petroleum as an illuminator:

Articles Used.	Quan. of light.	Quan. of light from an equal mess. of oil.	Cost of equal quan. of light.
Coal Oil or Petroleum	13.70	2.60	4.00
Camphene	5.00	1.30	4.95
Whale Oil	2.40	.85	12.00
Lard Oil	1.50	.70	17.60
Sperm Oil	2.00	.95	26.60
Burning Fluid	.65	.40	29.34

ANOTHER EXPERIMENT IN AERIAL NAVIGATION.—The ascension of a ballon-ship called the Esperance was to have taken place at the Hotel des Invalides, Paris, on the 10th ultimo, but great difficulty was experienced by the inventor, M. Delamarne, in adjusting the screws, helm, sails, &c. The Emperor, who happened to be driving out and saw the crowd, went to the spot to inspect the apparatus, and conversed some time with the inventor, but at last, not perceiving any great probability of an ascension, took his departure. The crowd then became impatient and broke through the barriers. At a quarter-past seven the car was attached, and the whole ascended some few yards from the ground and moved in the direction of the Invalides; but the balloon, being either damaged by the machinery or overweighted, burst and fell heavily to the ground.

PATENT CLAIMS.

Pertaining to Gas, Mining, Petroleum, Water, etc.

For the two weeks ending June 17.

55,447—PORTABLE GAS STAND.—Boyd, Allen and John Riddell, Boston, Mass:

We claim, 1st, The sliding portable gas stand, constructed and operating substantially as described.

We also claim the combination of the stuffing-box with the inner end of the sliding tube, as and for the purposes specified.

55,450—LAMP CHIMNEY.—H. C. Appleby, Conneaut, Ohio.

I claim a spirally corrugated or fluted glass lamp chimney, constructed substantially as shown and described.

55,488—ROCK DRILL.—John Greives, Brooklyn, N. Y.

I claim the drill constructed of a central polygonal rod with cutting point and angular sectional cutters bolted to the sides of said rod, substantially as herein specified.

55,578—PIPE WRENCH.—Durfee W. Coggeshall, assignor to George E. Church, Providence, R. I.

I claim the pipe-wrench made substantially as described viz: of the lever or hinged jaws or clasp, provided with the tooth, a, and bearing, f, and combined and arranged in manner and so as to operate substantially as and for the purpose as herein-before described.

55,626—PUMP FOR DEEP WELLS.—Joseph H. Davis, Alleghany City, Pa.

I claim the enlargement, B, of the valve chamber, A, when constructed and operating for the removal of the foot-valve, D, substantially as herein described.

55,641—LIGHTING GAS BY ELECTRICITY.—Samuel Gardiner, Jr., New York City.

I claim, 1st, The combination with a gas burner of an electrical conducting cord and tassel, D, D', connected with the poles of a battery, substantially as described.

2d, The combination with the above of the stiff wire, G, igniting-finger, J, lever, L, and spring, M, substantially as described.

3d, In combination with the electrical lighting devices herein described, I claim the non-conducting or insulating stud, R, employed in the manner described.

55,642—TURNING GAS-COCKS BY ELECTRO-MAGNETISM.—Samuel Gardiner, Jr., New York City.

I claim, 1st, Turning a gas-cock by means of a sliding-rod, E, and click, G, acting directly upon the toothed wheel, H, on the axis of the gas-cock and employed in combination with an armature, B, and magnet, A, A, substantially as described.

2d, The combination of the armature, B, of the guides, C, C, and springs, K, substantially as and for the objects specified.

3d, The stop or stud, e, attached to the sliding-rod, E, and employed to limit the motion of the wheel, H, as set forth.

4th, The combination with the wheel, H, and E, and the click, G, of the retaining power, J, applied and operating in the manner and for the purpose substantially as described.

5th, In combination with the apparatus herein described, I claim the helical spring, D, and adjustable collar, M, and thumb-screw, N, arranged as described, and employed for the purpose specified.

55,652—GAS STOVE FOR HEATING.—David Greene Haskins, Cambridge, Mass.

I claim, 1st, The combination of the air heating chamber, B, with the chamber, D, the concentric casing a, and interposed radiating material, substantially as and for the purpose specified.

2d, The combination of the tapering chamber, G, with the chamber, D, substantially as and for the purpose specified.

3d, The combination of the air-heating chamber, B, the escape-pipe, o, and the partitioned mantle or radiating chamber, F, as and for the purpose set forth.

4th, The arrangement of the upper burners, g, with the chamber, D, in combination with the chamber, B, and space, H, as and for the purpose specified.

55,741.—APPARATUS FOR CARBURETING AIR.—John B. Terry, Arburndale, Mass.

I claim the improved air-forcing apparatus, made substantially as described, viz: not only of the two wheels, A, B, having their buckets arranged as explained, but of the case, E, provided with the chambers, I, K, L, the connecting tube, H, and the induction passage, G, as set forth.

55,745.—LAMP WICK.—Cyrus L. Topliff, New York City.

I claim the application to a lamp wick of a solution of gum and alum, for the purpose described.

55,748.—Clay and Peat Press — B. Van Vranken, Schenectady, N. Y.

1st, In a machine for molding clay and peat, employing a vertical pug-mill, or mixing-box, B. and a press-box, D, I claim the adjustable pusher, F, applied to a table, E, for moving the mold boxes from the rear to the front end of said table, substantially as described.

2d, The combination with an upright pug-mill, B, press-box, D, and a table, E, I claim the rack bars, G, G, oscillating sectors, H, H, and a pitman-rod, J, connecting with the main-shaft, C, substantially as described.

55,778.—Apparatus for carbureting Air, Gas, etc.—A. C. Messenger, assignor to himself and A. T. Smith, Syracuse, N. Y.

1st, In an apparatus for carbureting gas for illuminating purposes, I claim the use of double perforated walls, d, d, having a suitable capillary substance confined between them, said walls being so arranged as to form a porous division through which the gas is forced, substantially as described.

2d, The forming of two appartments in a vessel, A, by means of an upright double wall partition, which is rendered sufficiently porous to allow of the absorption of the fluid in said vessel, and the passage of gas through it, substantially as described.

3d, Subdividing the chamber, C, by means of a partition which is applied on one side of the induction passage, a, for the purpose and in the manner substantially as described.

55,782.—Hydrant.—Agur Pixley and John Robertson, assignors to Robertson, Dow & Company, Brooklyn, N. Y.

We claim the ring, I, formed with a hole or opening, n, and arranged upon the hollow valve-stem, D, with reference to the hole or opening, r, thereof, in combination with the valve-stem, D, and valve-box, C, substantially as herein set forth for the purpose specified.

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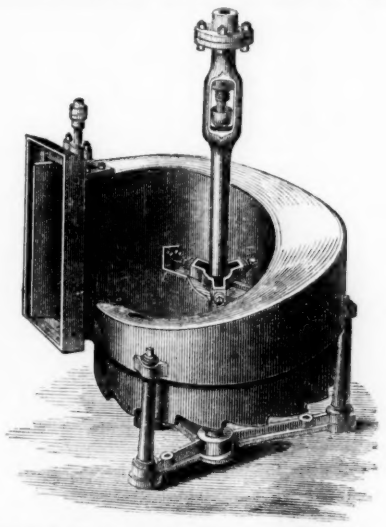

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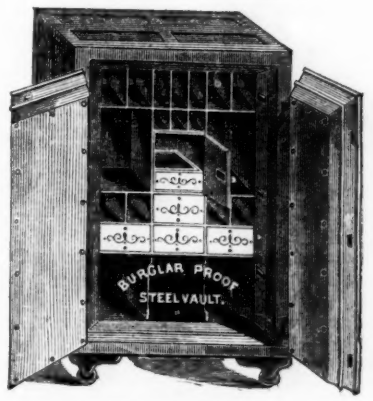

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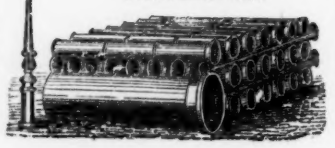

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For Wet Meters, Gasoline Machines, Hydraulic Presses, &c.

We warrant our Glycerine free from acid and not to corrode the Meter metal, or to congeal or freeze at a stated temperature—also, not to evaporate to any extent The advantages and savings derived from the use of our fluid can be testified by many Gas Light Companies which we have supplied. We only refer to the certificates of H. J. Miller, Esq., President of Cincinnati G. L. and Coke Co., and Dr. J. Lawrence Smith, Professor of Chemistry in the Louisville College, and President of the Louisville Gas Co.

HARTMAN & LAIST,

Office No. 71 Main street, Cincinnati —Chemical Works on Providence st, and Miami Canal, near Findlay st.

CERTIFICATE.

Office Louisville Gas Co., Louisville, June 28, 1865.

This is to certify, that the Louisville Gas Co have used for about two years, the Glycerine prepared by Messrs. Hartman & Laist of Cincinnati, in their Wet Meters, and have in all instances found it to give most perfect satisfaction. Prior to the use of the above Glycerin, we had employed that manufactured by other parties, and we consider H. & L.'s superior to any we used.

J. LAWRENCE SMITH, President.

Office Cincinnati Gas Light and Coke Co., July 7, 1865.

This will certify, that Messrs. Hartman & Laist of Cincinnati, furnished this Company with Glycerin for Wet Meters some two years since It has proved very satisfactory, having resisted the action of frost during two winters and evaporating not more than six per cent. per annum, as guaranteed by them. The standard being, for density, 15 deg Beaume's scale. They were the first to introduce it practically to this Company. H. J. MILLER, President.

☞ L. BRUCKMAN, 107 Warren street, up-stairs, Agent for New York.

KEROSENE

Cooking Apparatus.

All the cooking for a family can be done with Kerosene Oil, with less trouble and at less expense than by any other fuel.

Our stoves give no smoke or odor, and are not liable to get out of order, being as simple in every respect as a kerosene lamp. The Baker, Boiler, and Flat-Iron Heater are the only special articles of furniture required. For all other purposes, ordinary stove furniture may be used.

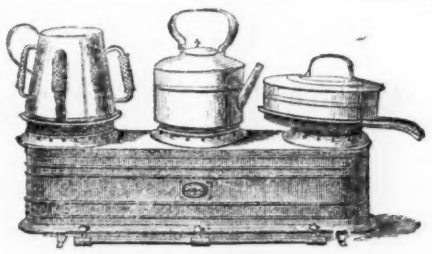
We would call attention to the fact that for the past three years, the Company has devoted itself almost exclusively to the manufacture of Kerosene Cooking Apparatus, and is prepared to guarantee that every article shall perform all that is claimed for it.

Liberal discounts to the trade. Send for circulars and price list.

KEROSENE LAMP HEATER CO.,

206 Pearl Street,

NEW YORK.



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The "EAGLE" Gas Heating

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Positively guaranteed free from Smoke or Smell.

Will Heat Offices, Parlors, Dining, Sleeping, and Bat Rooms. Also,

The EAGLE. Gas Cooking

STOVES & RANGES,

Will Boil, Broil, Roast, Bake, Toast, Stew, and Heat Irons.

The EAGLE GAS STOVES and RANGES have been in use for over Three years, and are found to be the most SIMPLE, COMPLETE and PERFECT Arrangment for HEATING and COOKING, in every respect ever invented, and to do the Work with LESS TROUBLE, in LESS TIME and at LESS EXPENSE than any Coal or Wood stove.

Their WONDERFUL NEATNESS, CONVENIENCE and ECONOMY can be seen at a glance.

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COAL OIL STOVES,

For Cooking and Heating.

The American Advertising agency 389 Broadway, N Y. Bus. Dept., E. Alvord, cor. Dept., Fowler & Wells, receive orders for our stoves.

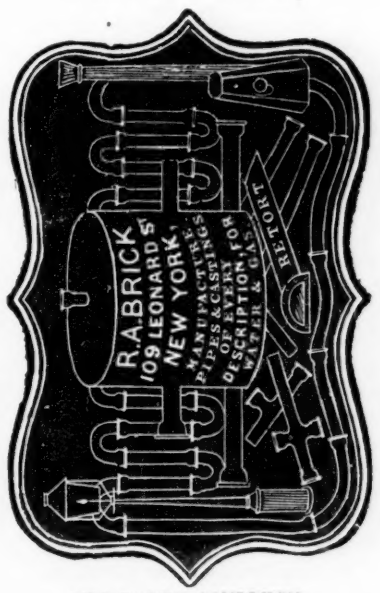
EAGLE GAS STOVE MANUFACTURING CO.

No. 474 BROADWAY, N. Y

☞ The Company have descriptive Catalogues, which will be sent or delivered, upon application for them.

DRIVING PIPE,

BERGEN IRON WORKS,



OFFICE 109 LEONARD STREET, NEW YORK.

AND BANDS COMPLETE.

Mining & Petroleum Standard
AND
AMERICAN GAS-LIGHT JOURNAL.

Published on the 2d and 16th of Each Month

At No. 22 Pine Street, New York.

BRYANT, CALLENDER & CO.,

EDITORS AND PROPRIETORS.

Profs. PARTZ & BUCK, Consulting Chemists.

MONDAY, JULY 2, 1866.

WISHING TO MAKE this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its colums aad devoted, the publishers solicit letters from all among them who make the study of those subjects a pleasure, or a profession.

SUBSCRIBERS would confer a favor upon us by remitting CHECKS, or POST OFFICE MONEY ORDERS, as we are frequent losers where money is enclosed in letters.

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Our Journal.

The new heading and general improvement in the appearance and arrangement of this new volume will be appreciated by our patrons. *If* "success is evidence of merit," we can assume to ourselves more merit than we feel, by our own judgment, entitled to.

We launch volume 8 with a fair wind and full sails, confident of making it a more successful enterprise than any antecedent.

The Great Coal Monopoly.

Mr. Gladstone, in presenting the annual budget to the British Parliament, recently discussed the question of the future exhaustion of the coal fields of England, and compares the relative product of coal in the united kingdom at the present times with other countries, and goes on to show the advantages which England claims in external commerce and trade, and asks what has given it the lead? and answers by saying, it is the "possession of coal in proximity to what depends upon coal," which commands this pre-eminence in industry and commerce. He admits that the consumption of coal has increased, and is likely to increase in such a ratio that minds of the greatest among scientific authorities have been turned to the question; and the inquiry has been raised, what will be the influence upon the supply, if the consumption continues to increase, as he assumes it will.

Mr. Gladstone seems reluctantly to have awaked to the consciousness, that England cannot for many generations continue to produce coal at prices cheaper than other countries. He says, "I think it clear that at whatever time, whether fifty or one hundred, or any number of years hence, we may cease to be able to raise coal at a lower price than other countries, our relative position towards other nations must be lost; but of the question of coal against coal, there can be no doubt as to how the case stands.

There is another country, not only as rich in mineral wealth as ourselves, but with a coal surface thirty-seven times greater than the coal surface of this country. I allude to the United States of America; and though *most of the coal there contains so large an amount of anthracite that it is not fit for steam or for smelting purposes*, to domestic purposes it is capable of being adapted. We have *italicized* as above to direct attention to two or three material errors of fact in Mr. Gladstone's statement. The fact being that the area of anthracite coal fields of the United States, according to Mr. R. C. Taylor, is only about 437 miles, while the area of the bituminous coal fields is about 133,132 square miles. The second error is that anthracite coal is not desirable for generating steam, while in reality it is almost exclusively used in our merchant steam marine and the United States Navy; large numbers of our rail roads use it as a fuel for locomotives, and it is used considerable for smelting and especially when used in combination with bituminous coal, and also when desulphurized by lately invented processes. Mr. Gladstone, in speaking still further of the impending and probable results of this state of things, says: "Suppose, then, that preeminence in the cheap production of coal should be carried from us across the Atlantic, what will happen? There will be a decline of rents, a decline of profits, a decline of wages. And when rents, profits and wages decline, what will owners do? Those who receive wages, finding that wages are lower here than across the Atlantic, will immigrate, and the owners of movable property, finding that there is a wider and more profitable field for their capital elsewhere, will send their capital abroad. What will the owers of rents do? It appears to me that they cannot migrate; personally they may do so, but that from which they derive their income cannot migrate. The upshot will be, that the charge of the national debt, which is now borne in full on property, profits and rents, will remain as a permanent mortgage on the lands, houses and woods of the country."

Referring in this connection to the results arrived at by able and skillful statisticians who, under the authority of Government, have made enquiries into the matter, quoting as authority Mr. Hulme, he estimates the quantity of coal in the united kingdom within 4,000 feet of the surface, at 83,000 million tons. He states that in 1854 the consumption was 64,000,000 tons; in 1861 it was 85,000,000, or an increase in the consumption of 3.7 per cent., and taking a less figure of 3.5 per cent., the annual consumption in 1961 will be 2,607 millions of tons, and by 1970, or 104 years from this time, the consumption will have reached 130,000 million tons, or a greater quantity than all the coal now known to be available in Great Britain within 4,000 feet of the surface. This is truly a startling and serious dilemma for our neighbors across the water, and may well cause serious misgiving for the future of the great nation that has so long boasted of her gigantic monopolies of trade and commerce.

According to this estimate it requires but a slight stretch of the imagination to change the short but significant motto, so well known, "Brittania rules the waves," by substituting the name of her young but thrifty cousin of the occident.

PROSPECT PARK, BROOKLYN.—The plans for improving this elegant piece of ground are laid out upon a grand scale. Bonds for $150,000 will be issued by the City of Brooklyn to pay present expenditures, and further amounts will be cheerfully paid by the citizens for such a desireable object.

It is contemplated eventually to extend Franklin Avenue to Ravenswood on East River, and have communication across by a bridge to New York and thus afford a most sociable and convenient relation with Central Park.

A Novelty in Navigation.

We have recently been shown the model of a very novel invention called a "marine conveyance," by the inventors, Messrs. Blomquest & Crook, designed for the navigation of rivers and shoal waters, and which is so constructed as to easily pass over sand bars and other obstructions, and even travel on dry land. It is in fact a species of amphibious boat or car, consisting of a horizontal frame, something like a large platform rail car, supported upon the projecting shafts of large water-tight wheels or drums, there being a single drum forward, and two drums and a paddle wheel aft, the paddle wheel being of less diameter than the drums and situated between them on the same shaft. The forward drum has the capacity of both the aft drums combined. The boat or platform has large openings fore and aft to admit the upper halves of the drums to pass up through, so that it is supported upon the projecting drum shafts. These drums have a great buoyancy and are intended to sustain the weight of the boat when laden, several feet above the surface of the water. The aft drums and paddle wheel are to be put in motion by a steam engine, as usual, to propel the boat or car, while the forward drum will revolve itself as it meets the resistance of the water, thereby greatly lessening the power required to propel the conveyance.

It is asserted by the inventors that the boat can be propelled with great speed, owing to the avoidance of friction or resistance, as it passes through and partially over the water, and it can pass over bars and shallow places, and even travel on dry land; thus forming a novel and superior method of navigating our numerous shallow streams of the west and elsewhere at all seasons of the year.

We understand parties in St. Louis, Mo., have such confidence in the practicability of the plan, that they are about to build a boat of this description at a cost of about $20,000.

Our next number will have an illustration and a more complete description of this invention.

The model can be seen at the office of Mr. T. B. Bunting, 69 Beaver street, who is prepared to negotiate for the introduction and sale of the invention.

GAS EXPLOSION IN AVENUE A.—At about half-past ten o'clock one evening last week, a gas explosion occurred at the tenement house No. 168 Avenue A. The first floor is occupied as a store, and the upper part of the building by several families. When the store was closed a leak occurred in the gas pipe, which soon became so offensive that Peter Cail and Owen Maloy, living in the upper part of the house, endeavored to investigate the matter, and entered the store with a lighted candle. The room had become so full of gas that an explosion occurred, which tore off part of the ceiling of the store, and knocked down the walls. Cail and Maloy were both badly injured. They were removed to Bellevue Hospital. Several other tenants received slight injuries.

WE WISH to call the attention of our readers to the card of Messrs. Maynard & Tieman in another column. These gentlemen are perfectly *au fait* in their profession, as we know from experience, and we are happy to refer to them, all who are desirous of prompt and critical assays of minerals, and also reports upon mines and mining properties, etc.

Mr. J. H. Tieman has just returned from a tour of investigation of the mining regions of the Pacific slope, where his partner, Mr. G. W. Maynard, still remains.

LIST OF GAS COMPANIES.—The list of Gas Companies which we had prepared for this number, has been deferred until the next, in order to make needed corrections.

Brooklyn Water Works.

We must give more attention to Brooklyn. The improvements and general advancement which are now marking its progress, should not be unnoticed. Hitherto many of our "city people" have had an idea that Brooklyn was a kind of stipendiary of New York city, dependent upon our plethora for its population!

We find that they are progressing like a great people in Brooklyn and we shall with pleasure give in detail an account of some of their movements. At present we will incidentally notice an extension of their Water Works, which is now under way; a pipe of 48 inches diameter is being laid from the main reservoir to the city, a distance of six miles. The pipe is in lengths of 12 feet 5½ inches, and lays nett 12 feet. It is 15-16ths of an inch thick and weighs each length 8,270 pounds. J. W. & J. F. Starr, of Camden, N. J., and the Warren Foundry and Machine Company, (M. Runkle, Sup't.), at Philipsburg, N. J., are supplying the pipe. The laying of the pipe will commence in the first week in July, and it is believed that 4½ miles will be laid by the 1st May next. At that point they will have a connection with a main source pipe. The cost of the six miles will be about one million of dollars. The admirable 48 inch stop-cocks for the main are manufactured by the Boston Manufacturing Company, Z. E. Coffin, Superintendent.

The Gas Companies' Works will receive our next attention.

Heat Produced by the Agitation of Water.

While engaged in experimenting on the evolution of heat by the agitation of water, Mr. Rennie made use of a kind of churn capable of containing ten pounds of water, and which revolved at the rate of 232 revolutions per minute. He succeeded in raising the temperature of the water to a boiling point, and, as an illustration, an egg was boiled hard in ten minutes. A large portion of the heat generated in the Freiberg barrels may probably be accounted for in this manner.

[The above is taken from the *Mining and Scientific Press*. We are at a loss to see wherein heat can be generated by the simple agitation of water. Does it arise from friction of the water upon itself, or upon the sides of the agitating vessel; or is it caused by compression of the water? We do not know what Mr. Rennie's theory is; but it appears to us that the heat cannot be evolved by compression, for water is nearly incompressible. Friction causes the latent heat of one or both media to become sensible, according to the old theory.

According to Count Rumford's theory, now generally applied by the *Savans*, it is the conversion of motion or forces that produces heat by friction or condensation. In this experiment there seems to be only one medium subject to either of these conditions, namely, the sides of the rotating vessel, unless we look to the air. We can easily conceive how the continuous and rapid compression and condensation of air by violent agitation in contact with water, may impart sufficient caloric to the water to cook an egg. It would be interesting to see Mr. Rennie's experiment with a vessel exhausted of its air, and note the result.—Eds.]

PATENT CLAIMS.—In this number we commence the publication of a list of patents pertaining to gas, mining and petroleum interests, issued from the United States Patent Office for the two weeks preceding publication, which will be continued throughout the year.

PEAT.—We have at our office, for inspection, various samples of peat, crude and manufactured.

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL, is published at No. 22 Pine Street opposite the Sub-Treasury Building on the 2d and 16th of every month, and is a recognized official organ of—

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PETROLEUM, WATER-SUPPLY, AND

SCIENTIFIC SUBJECTS GENERALLY.

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☞All communications to be addressed to "The Editors," No. 22 Pine Street, New York

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GIVES A BRILLIANT LIGHT WITHOUT THE use of a chimney. Fits on to almost all kerosene lamps. It is the best no-chimney burner made, and no family should be without them. Samples sent by mail on receipt of 50 cents.
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Something New and Useful.
A POCKET LANTERN, which, when folded, occupies the space of a cigar case, and when open gives a good light. The most convenient article for any one who is liable to be out at night. Sample sent by mail on receipt of one dollar.
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GERMAN LAVA GAS TIPS,
And Proprietor of WINCHESTERS' Improved
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We Would call especial attention to our recently improved
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One Cent for Eight Hours.
The improved Union Burner without chimney, for a hand or portable night lamp is unrivalled.
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ALL ORDERS promptly filled for his Patent Petroleum Stoves or Lamp Heaters, which are acknowledged to be superior to any other article of the kind now in use, as regards economy in consumption of oil, as well as simplicity of construction.
These Cooking Apparatus are used like any coal oil lamp, being provided with a sheet metal chimney, in consequence of which they burn without odor or smoke. They radiate no heat into the room, and are therefore very desirable in hot weather.
Also, Nursery and Night Lamps combined, a superior and cheap article for nursery or sick room; has a kettle, cup and pan, complete.

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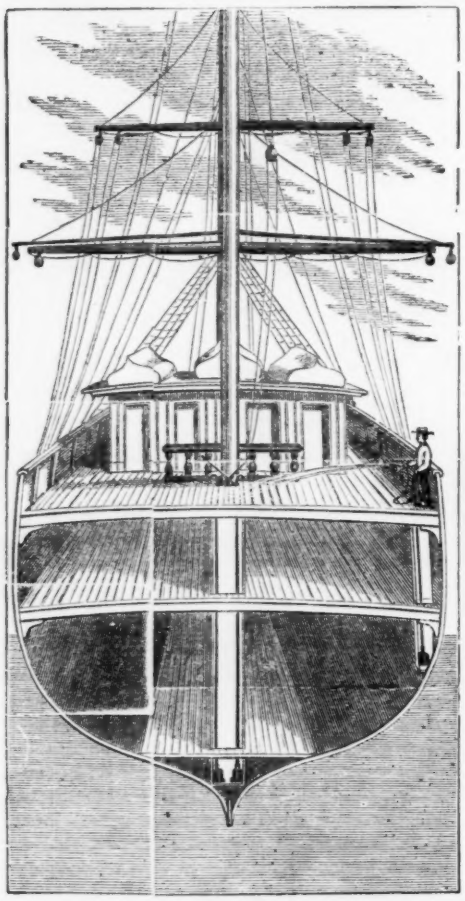

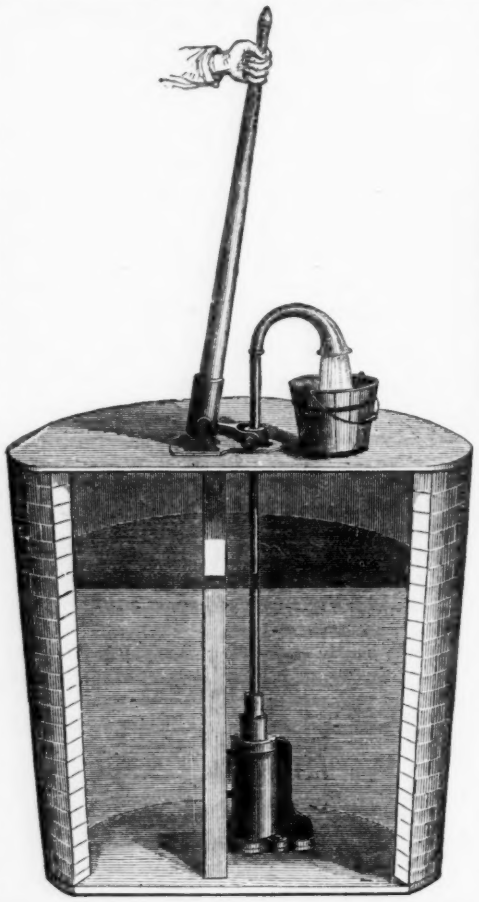

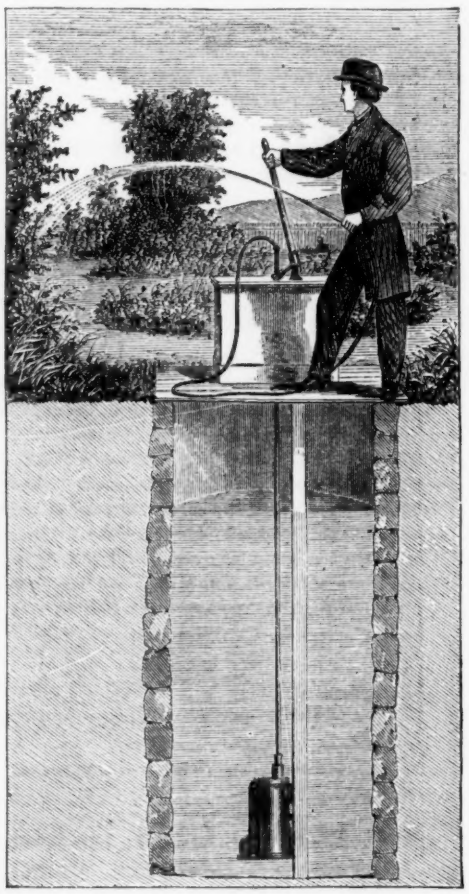

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Pumps, completed, will be delivered from the manufactory of the Company, to parties purchasing rights at a royalty of One Dollar each.

THE PATENT SUBMERGED PUMP.

This valuable Invention, now first introduced, will, it is believed, supersede all classes for any purpose in use at the present time.

ITS ADVANTAGES.

FIRST.—SIMPLICITY. The entire pump is composed of but six parts, all of cast-iron, which can be put together by any mechanic.

SECOND.—DURABILITY. From the fact that it is always submerged, it is perfectly lubricated, and requires no packing As no water can remain in the pipe when not in motion, there is no danger of freezing.

THIRD.—CAPACITY. It is contended that, for the power applied, this Pump excels all others. The No. 1 (the smallest size,) of this Pump, with the power of one hand, has a capacity of thirty gallons per minute, and will throw a stream seventy feet in the air.

FOURTH.—CHEAPNESS. For economy, this Pump surpasses all others, its first cost being about one-third less than that of other Pumps of the same capacity, and being much less both in size and weight, there is a great saving in transportation.

ITSU SES.

FIRST.—For a House Pump; the smallest size of the patent Submerged Pump is sufficient for all family purposes. Placed in a well or cistern, water may be conveyed to every room in a common sized house.

SECOND.—For a Farm Pump; for all purposes connected with irrigating, watering stock, etc., etc. This Pump can be placed in running streams, ponds, bayous, etc., and water conveyed to any required distance.

THIRD.—For a Ship Pump; Any ship owner or captain, with short experience in the use of this Pump, will give his unqualified approval for ship purposes, either to be used as a bilge pump simply, or for washing decks, etc. From its simplicity, as a bilge Pump it will be found entirely free from choking, and will clear grain, dirt, stones, etc., with ease.

FOURTH.—For a Factory Pump, or for air in Oil Wells, for Breweries or for pumping acids, hot liquors, etc., it is invaluable. It cannot be affected by any liquid.

FIFTH.—To all Directors and Officers connected with mining interests, the PATENT SUBMERGED PUMP presents great advantages.

The experience of the last five years have clearly proved at what great expense, both in first cost and freight, it has been necessary to be at to secure the proper means of expelling water from the mines, quarries, etc. With this Pump an immense saving is effected in both instances, as in first cost it is much less than other Pumps of the same capacity and power.

Its principle is that of a Double-acting Force Pump, with a heavy double-acting piston cast in one piece, and a double-acting iron valve within the same, without the use of leather valves or any packing whatever.

DIRECTIONS FOR ADJUSTING PUMPS.

1st. Find the exact measurement of the well or cistern from the extreme bottom to the top or curb, after which make such an allowance as may be required, above the curb or top, as will accommodate the sized vessel required to be used, and in respect to the quantity of pipe required, always deducting for the length of the Pump and the space between the bottom and the Pump. 2d. Provide a plank, to which the Pump must be secured, not less than seven inches wide by two or two and a half inches thick, which should reach from the bottom to the top of the well or cistern, always placing the plank on the side of the well or cistern. 3d. Before putting the plank into a well or cistern, fit and bolt the Pump to the plank, and screw the pipe firmly in, taking care to have the Pump not less than one foot from the bottom of a well, nor less than six inches from the bottom of a cistern. Yet, if the water be six feet deep in a well, then adjust the Pump three feet from the bottom, and in like proportion as the case will permit, always being governed by the depth of water in the well, and always observing the necessity of securing the plank at the bottom of the curb, by braces across the well, and standing perfectly plumb and solid under the platform orcovering of the well, when the fulcrum can be fastened to the platform, taking care to give the pipe free action when in motion.

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—AND—

FIRE BRICK WORKS,

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MANUFACTURERS OF

Gas Retorts, Tiles, Fire Brick,

Black Lead Crucibles, and Carburet of Iron Stove Polish,

JERSEY CITY, N. J.

Refer to—Manhattan Gas Light Co., New York. [135

Philadelphia Fire Brick Works,

Corner of Vine and Twenty Third sts., Philadelphia,

JOHN NEWKUMET,

Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notice.

PRINCE'S METALLIC PAINT,

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, ouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

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AMALGAM BELLS

At prices within the reach of every Church, School, Cemetery, Factory, or Farm in the land. Their use throughout the United States and Canadas for the past six years has proven them to combine most valuable qualities. Among which are TONE, STRENGTH, SONOROUSNESS, and DURABILITY OF VIBRATION, unequalled by any other manufacture. Sizes from 15 to 5,000 lbs., costing TWO-THIRDS LESS than other metal, or 25 cents per pound, at which price I warrant them twelve months. Old bell metal taken in exchange, or bought for cash. Send for a circular to the manufacturer,

JOHN B. ROBINSON,
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List of Academy, Steamboat, Fire-alarm, and Church Bells, with particulars as to Weight, Sizes, Price of Bells, Hangings, etc.

Weight of Bells.	Diameter.	Price of Bells without Hangings.	Price of Patent Hangings.	Price of Bell and Hangings complete.
225 lbs.	26 inches.	$56 00	$15 00	$71 00
275 "	42	69 00	18 00	87 00
375	36	94 00	22 00	116 00
450	84	112 00	25 00	137 00
600	02	150 00	30 00	180 00
750	89	188 00	35 00	225 00
1,000	64	250 00	42 00	292 00
1,200	48	300 00	45 00	345 00
1,400	50	350 00	50 00	400 00
1,600	52	400 00	54 00	454 00
1,800	55	450 00	60 00	510 00
2,000	58	500 00	62 00	562 00
2,500	60	625 00	72 00	697 00
3,000	63	750 00	85 00	835 00
3,500	66	875 00	87 00	962 00
4,000	69	1,000 00	100 00	1,100 00
4,500	72	1,125 00	113 00	1,238 00
5,000	75	1,250 00	125 00	1,375 00

List of Prices, Weights, and Sizes of Farm, Hotel, Steamboat, School-house, Shop, and Factory Bell.

These Bells are fitted with Yoke, Standard's Crank and Bolt, complete for use.

Weight of Bell and Hangings.	Diameter.	Cost of Bell and Hangings complete.
15 lbs.	7 inches.	$3 75
20	8½	5 00
35	10	8 75
50	12	12 50
75	16	18 75
100	18	25 00
150	20	37 50
200	22	50 00
250	24	62 50

Larger Sizes made to Order at 25 cents per pound.

Guarantee.—All Bells sold at the above prices WARRANTED against breakage by fair ringing, for TWELVE MONTHS from time of purchasing. Should one fail, a new bell will be given by urning the broken one.

Orders may be sent through the AMERICAN ADVERTISING AGENCY, 389 Broadway, New York.

In case a Bell breaks after the expiration of the Warrantee, I allow HALF PRICE for the old metal. JOHN B. ROBINSON, 36 Dey Street, N. Y.

SMITH & SAYRE,

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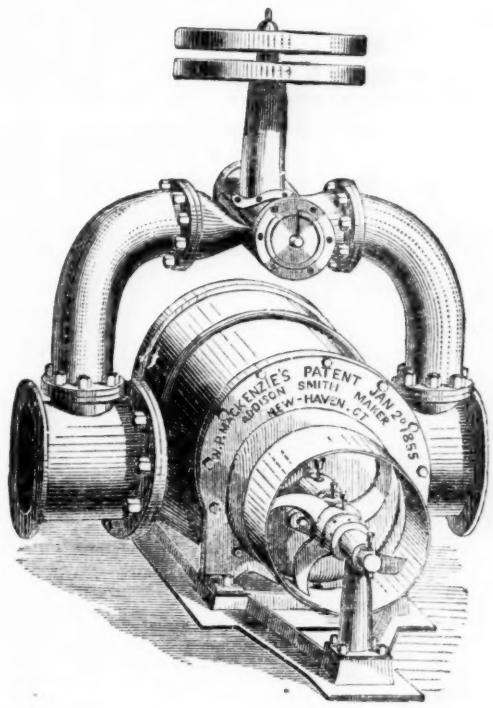
THE MACKENZIE PATENT GAS EXHAUSTER

AND

PATENT COMPENSATOR.



They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable, cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

MACKENZIE PATENT BLOWER, PATENT CUPOLA AND SMELTING FURNACE.

The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 ons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. fuel. Address

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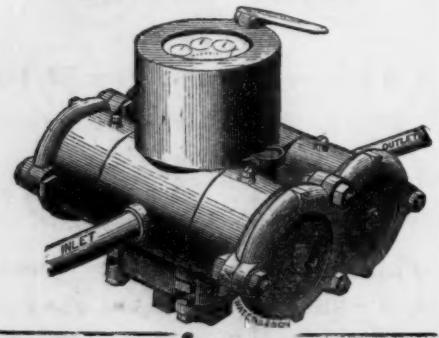

PATENT WATER-METER

This Meter is also used for the measurement of Oil —it combines

ACCURACY, SIMPLICITY, and REMARKABLE DURABILITY with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

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GARDEN ADORNMENTS,

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The largest variety in the United States.

STABLE FIXTURES,

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Non Freezing and Non Evaporating METER FLUID,

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For Filling Wet Gas-Meters, cheaper, in the long run, than water.

Six years in general use in works using it, to the exclusion of all other fluid, and driving the dry meter out of use, enables us to recommend the patent with perfect confidence.

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The privilege of using the Patent has been granted in the following cities.

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PERCE'S MAGNETIC GLOBES,

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PERCE'S MAGNETIC OBJECTS.

A beautiful Terrestial Globe, elegantly mounted and colored, and supplied with
MAGNETIC MEN,
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MAGNETIC SHIPS,
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MAGNETIC LIONS,
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etc., etc., forming a
MINIATURE MAGNETIC WORLD.

PERCE'S MAGNETIC GLOBE has won the warmest ecomiums from the press; from men of science, and from all lovers of the beautiful and useful in science, in art, wherever it has been seen. As an article of HOUSEHOLD FURNITURE, it is elegant and useful; "as useful," says the New York *Independent*, "for the entertainment and instruction of the little ones at home as the piano, or any other instrument for domestic amusement and instruction."

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Perce's Magnetic Globe, 5 in. dia., Plain Stand,	$ 5
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The Globes of all the above sizes and styles are finished in the highest style of the art, are mounted on polished black walnut stands, and will form an elegant and attractive ornament for the parlor, library or drawing-room.

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Iron Store Fronts put up at short notice.

Square and Round Columns, Truss Girders, Vault Beams, Window Lintels, Sills, &c.

A large assortment of Railing Castings constantly on hand, or made to order, at the shortest notice.

Lamp Posts—Brooklyn Pattern.

☞ A large stock of the usual sizes of Round Columns kept on hand.

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CASTINGS FOR

GAS WORKS

OF ALL DESCRIPTIONS, INCLUDING

Purifiers, Exhausters, Compensators, Self-Acting Valves, Branches, Bends, &c.

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Malleable Iron Retort Lid.

SABATTON'S PATENT

Furnace Door and Frame.

Refers to—J. A. Sabatton, Esq., Engineer Manhattan Gas Co.—Col. A. J. White, Metropolitan Gas Co.—C. C Mowton, Engineer New York Gas Light Co.—J. Mowton Saunders, Engineer Baltimore Gas Co.—John T. Harrison, Engineer Savannah Gas Co.

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SILAS C. HERRING. JAMES R. FLOYD

FOR SALE.

A SET OF PURIFYING BOXES, 5 x 10 FEET, with Covers and Hoisting Apparatus, Center Seal, Connecting Pipes, &c., with eight-inch openings, nearly new, and in perfect order. Offered at a low price on account of being too small for the works. Apply to or address

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Every Saturday, the elegant Side-Wheel Steamships

SAN SALVADOR,

Commander, Joshua Atkins, and

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Every SATURDAY, from pier 13 North River.

Have been placed on the route to Savannah by the Atlantic Mail Steamship Company of New York, and are intended to be run by them in a manner to meet the first class requirements of the trade.

The cabin accommodations of these ships are not excelled by any Steamers on the coast, and although their carrying capacity is large, their draught of water enables them to insure a passage without detention in the river

San Salvador,	Saturday, May 19	Missouri,	Saturday, May 9
Missouri,	 26	San Salvador,	.. June 16
San Salvador,	.. June 2	Missouri,	 23

Returning, leave Savannah every Saturday at 8 o'clock, P. M.

Bills of Lading furnished and signed on the Pier.

For further particulars, engagement of Freight or passage, apply to

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Leave from pier No. 15 North River, (Liberty Street,) daily at 6 a. m. for Easton, Mauch Chunk, Williams port, Wilkesbarre, Mahanoy City, &c. Mail train at 8 a. m. for Flemington, Easton, Water Gap, Scranton, Wilkesbarre, Great Bend, Pittston, Binghampton, &c., 9 a. m. Western Express for Easton, Allentown, Harrisburgh, Pittsburgh, and the West, with but one change of cars to Cincinnati or Chicago, and but two changes to St. Louis. 12 m. for Easton, Allentown, Mauch Chunk, Reading, Pottsville, Harrisburgh, &c. 4 p. m. for Easton, Scranton, Great Bend, Bethlehem, and Mauch Chunk. 5 p. m. for Somerville and Flemington. 6:15 p. m. for Somerville. 7 p. m. for Somerville. 8 p. m. Western Express for Easton, Allentown, Reading, Harrisburg, Pittsburg, and the West.—Sleeping cars through from Jersey City to Pittsburg every evening.

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Trains leave New York, from the foot of Chambers Street, N. R., via the Pavonia Ferry, at 7 a. m., for Buffalo, Canandaigua, Rochester and principal stations, and also for Cleveland, via the Atlantic & Great Western R. R. For Otisville and way stations (milk train, daily) at 8:30 a. m. Mail train for Buffalo and intermediate stations, 10 a. m. For Port Jervis, Newburgh, Warwic, and intermediate stations, 4 p. m. Night Express, for Dunkirk, Buffalo and principal stations, 5 p. m. Night Express, 6 p. m., daily for Dunkirk, Canandaigua, Rochester and principal stations, and for Cleveland, via the Atlantic & Great Western R. R. Emigrant train for Dunkirk and Buffalo, 8 p. m. Freight Express, daily, for Dunkirk, 10:30 p. m. Trains leave for Patterson (daily), at 6:45, 7, 8:30, 9:15, 10 and 11:45 a. m.; 1:45, 3:45, 4, 4:30, 5, 5:30, 6:15, 8, and 10:30, (both daily) p. m. The word "daily" indicates that it runs Sunday,

NEW JERSEY, (via PHILADELPHIA. BALTIMORE AND WASHINGTON.

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Trains for Philadelphia only leave New York at 7 and 10,00 a. m.; 12, 4, and 6 p. m. and 12 Midnight.

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For Washington, 8, and 10,00 a. m. and 6, 7 p. m. and 12 Midnight—Through ticket sold and baggage checked for the West, on 7 a. m. and 6 p. m. trains.

For Newark, 6, 6.30, 7.30, 8.10, 9, 10, 11, and 11.40 a. m., 12 m, 1, 2, 3.20, 3.40, 4.10, 4.30, 5, 5.10, 5.20, 5.40, 6.10, 7, 8.20, 10, and 12 p. m.

For Elizabeth, 6, 7, 8 10, and 10 a. m.; 1, 2, 3.20, 3.40, 4,10, 4.30, 5, 5,10, 5.40, 6.10, 7.10, 8 20, 10 and 12 p m.

For Rahway, 7, and 10 a. m. and 12, 2, 3.20, 4.10, 5.10, 5.40, 7.10, and 12 p. m.

For New Brunswick, 7, 8, 10, and 11.30 a. m.; 12 m. 4, 4,10, 5.10, 6, and 12 p. m.

For Millstone, at 8 a. m.; 2.15, and 4.10 p. m.

On Sundays trains leave New York for Philadelphia and intermediate stations at 6 p. m. and for Washington, 7,00 p. m

Military tickets will not be received in the 8 a. m. or 7 p. m. trains.

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Leave Philadelphia at 1.15, 3.35, 8 and 11.15 a. m. and 2 50, 4.30, and 6.45, p. m. arriving in New York at 4.42, 7.02, 12.05, and 2.55, a. m. and at 6.22, 8.20, and 10.27 p. m.

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Kerosene Cooking & Heating

STOVES AND RANGES.

THESE COOKING STOVES WILL

☞ *Bake, Boil, Stew, Fry and Roast,*

With the greatest economy and facility, and without heating the room in which they are used. They are perfectly simple, operating like an ordinary Kerosene Lamp with a chimney, and are the only Kerosene Stoves that burn without smoke or odor.

"We have been perfectly astonished to see what a labor-saving, dirt saving and heat-saving institution is EDDY'S PATENT KEROSENE STOVE. Taking the cost of running it, and the result attained, it is the best patent in the market."—*Worcester Daily Spy.*

Our Heating and Cooking Stoves are very convenient and economical, especially where a fire is required but a few hours at a time.

Orders for Stoves may be sent through American Advertising Agency, 389 Broadway, New York.

LESLEY & ELLIOT,
Manufacturers, No. 494 Broadway, New York.
Send for Illustrated Circular. (136

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Families and Manufacturers,

☞ *Something New and Invaluable for Family Use.*

We offer the public the simplest, strongest and best Knitting Machine in the world.

It occupies but little space—is portable and can be attached to a stand or table, weighs about 40 lbs.

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DALTON KNITTING MACHINE CO.,
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WEED'S

HIGHEST PREMIUM

Shuttle Sewing Machine

Has only to be seen and operated to be Appreciated.

Call and see for yourself before purchasing. Please bring samples of various kinds of thread, (such as is usually found at stores,) and various kinds of fabric, which you know the former most popular Sewing Machines either cannot work at all, or, at best very imperfectly.

SUPERIORITY.

over any other Machine in the market will be seen at a glance.

1st It runs easily and rapidly, and is so constructed as to endure all kinds of hard usage.

2d. No breaking of threads in going over seams.

3d. No imperfect action of the feed at uneven places in the work.

4th The Weed-stitch catches of itself, and will sew from the finest lace to the heaviest leather, and 20 cotton to coarse linen thread.

5th. The Weed Machine will do beautiful quilting on the bare wadding, without using inner lining; thus leaving it soft as if done by hand.

6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, makes it equal, if not superior, to six machines combined; for instance. it Binds, Hems, Tucks and Sews on the band at the same time, and in face, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

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Below we give a few prices:

No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
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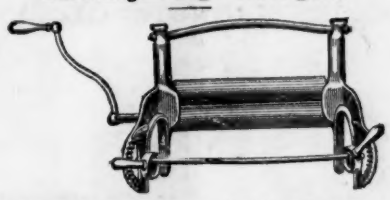
No. 3. Extra Oil Polished Black Walnut, Half Case, Large Table beautifully Ornamepted.	75,00

WEED SEWING MACAINE Co.,
36) 506 Broadway, New York

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day.

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*
That a *simple* machine is better than a complicated one.
That a Wringer should be *self-adjusting, durable, and efficient.*
That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.
That wood soaked in water will *swell, shrink,* and *split.*
That wood-bearings for the shaft to run in *will wear out.*
That the Putnam Wringer, with or without cog wheels, will *not tear the clothes.*
That cog-wheel regulators are not essential.
That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.
That all who have tried it pronounce it the *best* Wringer ever made.
That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and any others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January,* 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any,* to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.
Sample Wringers sent, express paid, on receipt of price.
Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,
18 PLATT STREET, New York,
BENNINGTON, Vt.,
CLEVELAND O.

WATER AND GAS PIPE.

The Boston Bituminized Pipe Company,

Are now manufacturing and prepared to take orders, for their PATENT PIPE, (from 2 to 12 inches in diameter,) as a substitute for Iron, Copper, Lead, &c., for the conveyance of WATER, GAS, SEWERAGE, &c. &c.

From the testimonials received, and the entire satisfaction it has given those having it in use, we feel warranted in claiming for this pipe over that of any other, the following advantages, viz:

It is much CHEAPER—has great strength (it having been tested to 500 lbs. to the square inch,) combined with LIGHTNESS, costing less for transportation; the joints are easily made and perfectly tight; it does not expand or contract from different degrees of temperature, and is free from *CORROSION* or *CONCRETIONS* forming; does not impart any taste or injurious properties to water, and as far as anything can be said to be indestructible, we deem this to be.

As a GAS PIPE, we say it has no superior. The Lowell Gas Light Co., purchased and laid some of this Pipe last year, and have likewise subjected samples to a test of four month's duration in their dry lime purifiers, with the most satisfactory results, in fact establishing beyond a doubt, its perfect adaptation to the wants and requirements of Gas Companies, specimens of which, together with the statement of E. Cushing, Esq., Agent Lowell Gas Light Co., who made these experiments. I shall be pleased to show, and give all other needed information, by applying in person, or by letter, to JOHN L. WEBSTER, Treas.,

Boston Bituminized Pipe Co.,
127] No. 2 Pearl st. House, Boston

AMBROSE SPENCER GILCHRIST.

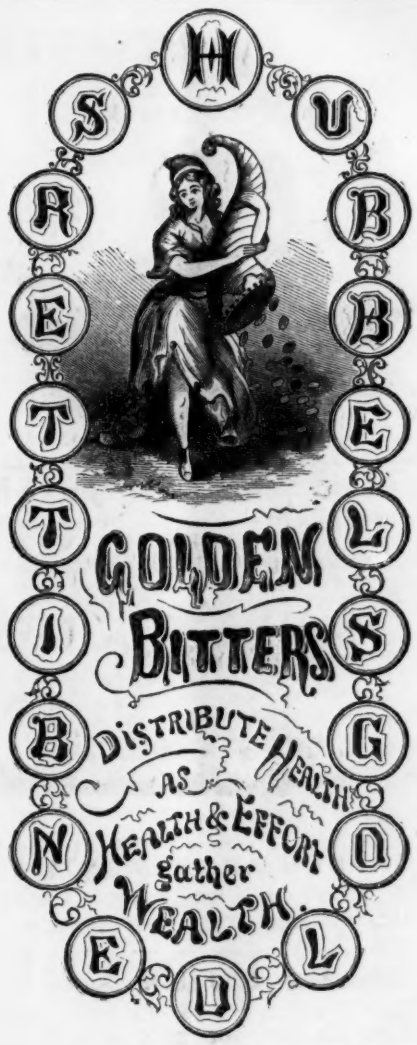
(LATE CAPT. U. S. V.,)

CIVIL, MINING

AND ARCHITECTURAL ENGINEER,

No. 200 BROADWAY, Office 12.

New York.



New York, April 18th, 1864.

* * * * * *

We respectfully invite your attention to and consideration of the justly celebrated and reliable remedy for DYSPEPSIA, HEARTBURN, DEBILITY and PROSTRATION. The Proprietors are proud to acknowledge the unparalleled success which has attended the sale of their valuable preparation, known in nearly every portion of the civilized world as the

"GOLDEN BITTERS."

We risk nothing when we term them a *valuable preparation,* for they are one of the few articles of the present day which are not a humbug; and we are willing and able to satisfy any person or persons who will call upon us, that the celebrated "GOLDEN BITTERS" are a genuine *bona-fide hygienic* article. It is the wish of the proprietors that the virtue of the article be tested before condemning. A decision of their merits by any one who has tried them, is worth a million of purchased bogus testimonials.

For Creating a Healthy Appetite

they are invaluable, and are unequalled as a TONIC. They are mild in their action, and operate by giving *vigor* and *strength* to the system,—not by any change they produce in the solids, but through the medium of the living principle.

They are Purely Vegetable,

being composed of Gentian Root, Calamus, Sassafras, and many other remedial agents of the Vegetable world, all preserved in Jamaica Rum and Sherry Wine.

As a Beverage,

They are the most *wholesome, invigorating* and *palatable* stimulant ever offered to the public And the fact of their being prepared chemically and scientifically, precludes the possibility of a bitter, unpleasant taste, common to Bitters generally offered for sale. We especially recommend them to LADIES, and particularly to those suffering from

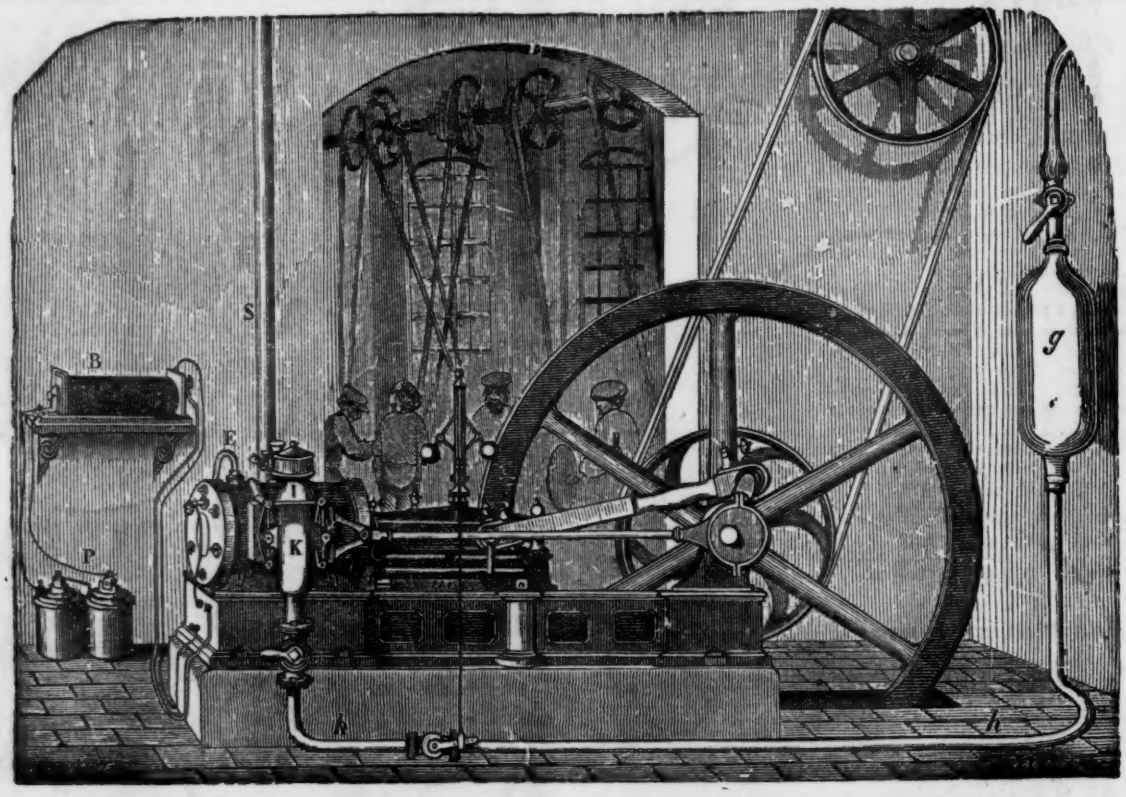
DEBILITY, WEAKNESS, AND PROSTRATION.

Half a wine glass of these "Bitters" three or four times a day, will produce a remarkable healthy change in persons greatly debilitated.

The "Golden Bitters" have been tried and not found wanting. They are put up in our own *Patent* quart bottles, and for sale by Druggists, Grocers, &c., throughout the world. Each bottle bears a fac-simile of the signature of Hubbel & Co.

GEO. C. HUBBEL & Co, Sole Proprietors
CENTRAL DEPOT, American Exp. Building, New York.

THE GOLDEN BITTERS.—We are not an advocate of stimulants or an alcoholic character; indeed we deprecate this "daily tonic" idea—this "morning toddy" which we see offered in all sorts of shapes as a recuperator, invigorator, revitalizer, &c. As a rule all artificial stimulants are dangerous remedies, and must be taken into the system as you would mercury or arsenic, in very small doses. But we have had an opportunity to try the now well-advertised article known as Hubbel's Golden Bitters, and are frank to say that where the system needs building up, where a stimulant is required to aid nature in restoring a lost appetite and infusing a vigorous action to the debilitated functions, we can recommend these Bitters. Hubbel's Golden Bitters are evidently intended to improve the debilitated human system, rather than to tickle the palate, and are, therefore a harmless and safe remedy keep in the house.—*New York Weekly Day Book.*



MOTEUR—LENOIR.

LENOIR GAS ENGINE.

This is a horizontal engine, in which a piston, by a connecting rod drives a horizontal shaft.

The gas enters by the pipe "h" from the regulating reservoir "g," (made of vulcanized india rubber,) which regulates the feeding and the branches connected with the gas-pipe.

The tube, K, receives the gas conveyed by the pipe "h," and conducts it to the valve, which opens and closes alternately, by means of a rod moved by an eccentric wheel fastened to the end of the shaft.

Two of Bunsen's piles, P, sufficient to produce the electricity are placed at a little distance from, and in communication with a Ruhmkorff electric apparatus, B. The electric current of this apparatus is conducted by means of insulated wires to the electricity distributor "m," placed on the front of the frame, while the current of electricity and its arrival at the inflammator, inserted at each end of the cylinder, is directed by the movement of the piston-rod, which, by an ingenious combination, impels a small movable slide before the distributor.

The burnt gas, after having performed its functions in the machine, escapes, by means of a valve, through a pipe, S, and the water designed to cool the interior of the cylinder enters through a double passage, by means of a pipe situated near the escape-valve, and goes out by the pipe, E.

A two horse and a half horse Engine are now in practical operation at the Dry Dock Iron Works, No. 435 East Tenth street, near East River, New York, where they are being manufactured, and those interested are invited to call and examine them.

THE LENOIR GAS ENGINE

Requires no Fire and makes no Smoke,

No Noise, no Dirt, and is thoroughly safe.

It is propelled by the expansion of Air, dilated by the combustion of Gas within the cylinder, ignited by the

ELECTRIC SPARK

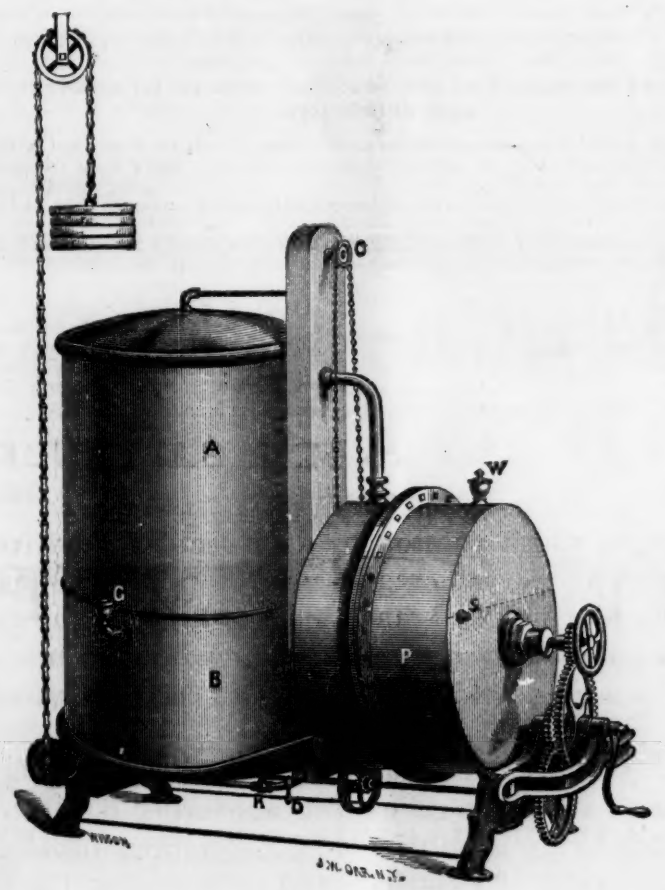
EMPIRE STATE GAS MACHINE,

LEVI STEVENS' PATENT, FOR SUPPLYING,

Dwellings, Stores, Factories and Public Buildings.

THE GAS GENERATED BY THIS MACHINE

Is a mixture of the vapor of hydro-carbon with common air. The mechanical devices employed are such as, from a long experience and critical examination into the nature of the element brought into use, seem best adapted to secure a certain and satisfactory result. GASOLINE, the liquid employed, is the more volatile portions of Petroleum, of a specific gravity of 0.6587. This liquid exposed to the action of this machine is vaporized, and a close mechanical mixture of the vapor with common air is effected. The value of the gas produced, its permanency, its illuminating quality, and freedom from liability to condensation, depend almost entirely upon the perfect and uniform character of this mixture. Hence the great importance of mechanical means adapted to secure all the conditions requisite in a Portable Gas Machine.



CASH PRICE-LIST OF MACHINES COMPLETE;

(Boxed and delivered on the cars at the Manufactory.)

No. 1,	$150,	5	Argand Burners.
do. 2,	250,	10	do.
do. 3,	350,	20	do.
do. 4,	450,	35	do.
do. 5,	600,	60	do.
do. 6,	1,000,	125	do.
do. 7,	1,500,	250	do.

This machine will produce the most brilliant and steady light without Fire or Heat, and is warranted to operate in every respect as represented.

The EMPIRE STATE GAS MACHINE is the most SIMPLE and EFFECTIVE MEANS KNOWN FOR PRODUCING GAS WITHOUT HEAT.

Its action is automatic, feeding itself with constant supplies of Gasoline, thus securing steady and uniform supplies of Gas. The gas produced is equal to the best known Illuminating Gas. It is as economical as any other, and is adapted to a wider range of use for Lighting, Heatin and Mechanical purposes. It will maintain its illuminating power under as great a degree of cold as any other. It is free from danger with the ordi nary care in using gas. Its remarkably pure and steady' ght is pleasant for the eye. It renders it easy for persons living remote from street gas pipes to enjoy the luxury of a pure GAS-LIGHT, at a COMPARATIVELY SMALL COST, AND WITH LITTLE TROUBLE.

☞ The public are invited to witness its operations at our store. GASOLINE will be supplied by us, at market prices, or may be obtained from the various other sources of supply now going into operation.

MITCHELL, VANCE & Co., 620 Broadway, New York,

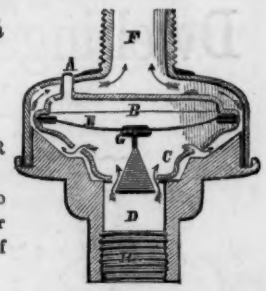
Manufacturers of Chandeliers and Gas Fixtures of every description. Also, Chandeliers, Brackets, Lamps, &c., for Coal Oil, adapted to Churches,

Public Buildings, Dwellings, &c.

NOTICE TO GAS COMPANIES AND GAS CONSUMERS.

THOMPSON'S PATENT GAS CONTROLLER,

The only Self-Acting Gas Controller, Regulator, and Burner Combined which has ever been invented, or known to science.



THE PRINCIPLE UPON WHICH THE THOMPSON'S AUTOMATIC GAS CONTROLLER works is one well known to mechanics, and is simple in its operation.

Within the circumference of a small cylinder below the burner is placed a conical valve attached to a movable diaphragm. The diaphragm rises or falls as the pressure of gas from the pipe is lesser or greater, and the valve acts upon the valve-seat with such regularity of movement that in a difference of from five-tenths of an inch pressure to five inches the variation in flame is hardly perceptible.

The simplicity of its machinery and the nature of the material used in its construction insure its regular action and durability.

In consequence of the uniform quantity of gas which passes the Controller to the burner, there is no waste, and a steady, soft flame is produced, which is important to all who read, write, or work by gas-light. The unsteady flickering blaze which invariably exists when the pressure of gas is beyond the requisition for consumption, has injured the sight of thousands who have been subjected to it.

For street lamps these Controllers are especially valuable, because the pressure varies materially during the night, and in consequence there is a waste of gas, and the light variable.

Improvements have lately been made in the mechanism of the Controller which makes them almost a perfect meter to each ourner, and they are now offered to he public with more confidence than ever before.

Reference is permitted to the following named gentlemen—

Col. CHAS. ROOME, President Manhattan Gas Company, N. Y.
C. H. SAND , Esq., President Metropolitan Gas Company, "
J. H. ADAM, Esq., President New York Gas Company, "
PETER COOPER, Esq., Cooper Institute, "
JOHN A. DUFF, Esq., Olympic Theatre, "
GEO. H. KITCHEN, Inspector of Gas Meters, N. Y
A. L. BOGART, Esq., Gas Engineer.
Col. J. A. SABATTON, Engineer Manhattan Gas Company.
Col. A. J. WHITE, Engineer Metropolitan Gas Company.
J. K. SIMPSON, Esq., Engineer Cooper Institute.

Persons interested are invited to call at the Office, 28 Liberty street, where they can see the operation by pressure guage and test meters]

M. L CALLENDER, Agent
Office, 22 PINE STREET.

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS & REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

Harris & Brother, Practical Gas Meter Manufacturers,

Continue, as heretofore at their old Establishmen, No. 1117 CHERRY ST., PHILADELPHIA, to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicted, and promptly attended to, by
HARRIS & BRO., No 1117 Cherry st., Philadelphia.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs;—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality—the number furnished by you to these works is over 5,000. JOHN C. CRESSON, Engineer;

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of wokmanship and accuracy of registration; they are surpassed by none, and equaled by few manufactories in the Union; we have used meters made by other establishments but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G. S. HOOKEY, Superintendent of the Gas Light Company of Augusta, Georgia.

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanshipall we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, BIRKINBINE & MEARS.

Messrs. Harris & Brother. March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory, and take pleasure in expressing my opinion to their correctness. On several occasions I have taken your meters apart, and found the material used in the manufacture of the same, to be as fine quality as is used in those imported from Europe, or made by any of the manufacturers in the United States. Respectfully Yours, GEORGE WIEGAND, Inspector of Gas Fittings, Philadelhia.

AUG. 2, 1866.